

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	10	((triazolyl or triazine) same (tetrazinyl or tetrazine) same (aminotriazine))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/10/19 20:09

=> d his full

(FILE 'HOME' ENTERED AT 09:08:44 ON 19 OCT 2006)

FILE 'REGISTRY' ENTERED AT 09:12:12 ON 19 OCT 2006

L1 23 SEA ABB=ON PLU=ON N2CNC-N3CNC-NCNCNC/ES

FILE 'HCAPLUS' ENTERED AT 09:13:18 ON 19 OCT 2006

L2 5 SEA ABB=ON PLU=ON L1  
L3 5 SEA ABB=ON PLU=ON L2 AND ?TRIAZINE?  
L4 3 SEA ABB=ON PLU=ON L2 AND ?TRIAZOLYL?  
L5 2 SEA ABB=ON PLU=ON L2 AND ?TETRAZINYL?  
L6 5 SEA ABB=ON PLU=ON L2 OR L3 OR L4 OR L5

FILE 'HCAPLUS' ENTERED AT 09:18:25 ON 19 OCT 2006

L7 4 SEA ABB=ON PLU=ON L6 AND (1840-2001)/PRY,PY,AY

=> file reg

FILE 'REGISTRY' ENTERED AT 09:24:10 ON 19 OCT 2006

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

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=> d l7 que stat

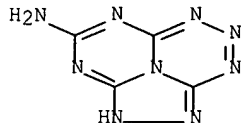
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L4 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L2 AND ?TRIAZOLYL?  
L5 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L2 AND ?TETRAZINYL?  
L6 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L2 OR L3 OR L4 OR L5  
L7 4 SEA FILE=HCAPLUS ABB=ON PLU=ON L6 AND (1840-2001)/PRY,PY,AY

=> d scan 11

L1 23 ANSWERS REGISTRY COPYRIGHT 2006 ACS on STN

IN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, magnesium salt  
(2:1) (9CI)

MF C4 H3 N9 . 1/2 Mg



● 1/2 Mg

\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):end

=> file hcaplus

FILE 'HCAPLUS' ENTERED AT 09:24:36 ON 19 OCT 2006

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=> d 17 1-4 ibib abs hitstr hitind

L7 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:66904 HCAPLUS Full-text

DOCUMENT NUMBER: 142:155985

TITLE: **Triazolyl-aminotriazine**  
compositions, including salts, and specifically  
**triazolotetrazinotriazines** derived from  
1,2,4-triazolo[4,3-a][1,3,5]triazine  
-3,5,7-triamine

INVENTOR(S): Koppes, William M.; Sitzmann, Michael E.

PATENT ASSIGNEE(S): United States Dept. of the Navy, USA

SOURCE: U.S., 11 pp., Cont.-in-part of U.S. Ser. No.  
171,114.

CODEN: USXXAM

DOCUMENT TYPE: Patent

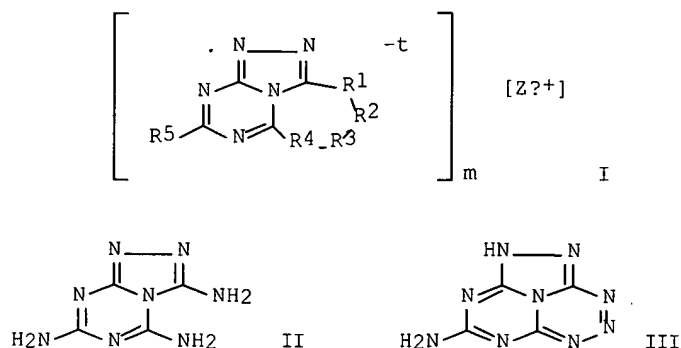
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 7

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 6846926	B1	20050125	US 2003-439805	200305 19
			<--	
US 6423844	B1	20020723	US 2001-874946	200106 06
			<--	
US 2003013878	A1	20030116	US 2002-171114	200206 14
			<--	
US 6632305	B2	20031014	US 2001-874946	A2 200106 06
PRIORITY APPLN. INFO.:			<--	
			US 2002-171114	A2 200206 14

OTHER SOURCE(S): CASREACT 142:155985; MARPAT 142:155985  
GI



AB The invention discloses salts of formula I, having a tricyclic structure with the third ring having either six or seven atoms [wherein: R1 and R4 = N; R2 and R3 = C or N; R2 is optionally present and preferably absent; R5 = H or substituent, preferably NH2; Z = H or a cation; m = 1-6, preferably 1-3; n = 1-6, preferably 1-3; and t = 0, 1, -1, or -2, preferably 1 (thus charge = -1)]. I are useful (no data) for providing a platform for novel explosive and pyrotechnic compds., particularly high nitrogen content, low carbon content energetic compds., as well as dyes, pharmaceuticals, and other compns. I are prep'd., e.g., via diazotization of 1,2,4-triazolo[4,3-a][1,3,5]triazine-3,5,7-triamine II and derivs. For instance, 2,4-diamino-6-hydrazino-s-triazine reacted with cyanogen bromide in aq. HCl to give 68.4% II.HCl (as the hydrate). Diazotization of this salt with NaNO2 in water at 25°, followed by heating to 70°, gave red crystals of the Na salt of invention compd. III, also as the hydrate, in 89% yield. The salt III.Na was converted to the free base (81%), and both III.Na and III were converted into 10 non-metallic salts of III and 8 addnl. metallic salts. The non-metallic org. salts of III included salts with guanyurea, triaminoguanidine, hydrazine, ammonium, aminoguanidine, diaminoguanidine, guanidine, methyltriphenylphosphonium, triethylamine, and 3,6-dihydrazino-1,2,4,5-tetrazine; the metal salts included Co(II), Cu(II), Al(III), Ni(II), Ba(II), Mg(II), Sr(II), and K salts.

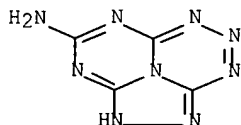
IT 485318-09-0P 485318-10-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)

(triazolyl-aminotriazine compns., including  
 salts, and specifically triazolotetrazinotriazines  
 derived from 1,2,4-triazolo[4,3-a][1,3,5]triazine  
 -3,5,7-triamine)

RN 485318-09-0 HCAPLUS

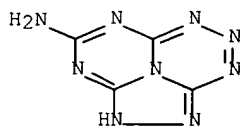
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monosodium salt  
 (9CI) (CA INDEX NAME)



● Na

RN 485318-10-3 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine (9CI) (CA INDEX NAME)



IT 485318-11-4P 485318-12-5P 485318-13-6P  
 485318-14-7P 485318-15-8P 485318-16-9P  
 485318-17-0P 485318-19-2P 485318-21-6P  
 485318-22-7P 485318-23-8P 485318-24-9P  
 485318-25-0P 485318-26-1P 485318-27-2P  
 485318-28-3P 485319-36-6P 828942-96-7P

RL: SPN (Synthetic preparation); PREP (Preparation)  
 (triazolyl-aminotriazine compns., including  
 salts, and specifically triazolotetrazinotriazines  
 derived from 1,2,4-triazolo[4,3-a][1,3,5]triazine  
 -3,5,7-triamine)

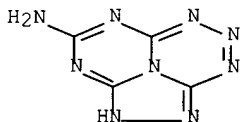
RN 485318-11-4 HCAPLUS

CN Urea, (aminoiminomethyl)-, compd. with 1H-1,2,3,4,5,6,8,8b-  
 octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

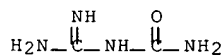
CMF C4 H3 N9



CM 2

CRN 141-83-3

CMF C2 H6 N4 O



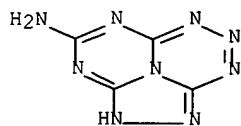
RN 485318-12-5 HCAPLUS

CN Carbonohydrazonic dihydrazide, compd. with 1H-1,2,3,4,5,6,8,8b-  
 octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

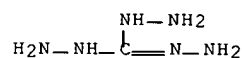
CMF C4 H3 N9



CM 2

CRN 2203-24-9

CMF C H8 N6



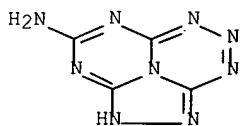
RN 485318-13-6 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, compd. with hydrazine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

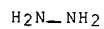
CMF C4 H3 N9



CM 2

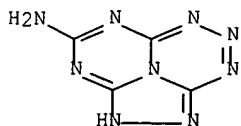
CRN 302-01-2

CMF H4 N2



RN 485318-14-7 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monoammoniate (9CI) (CA INDEX NAME)

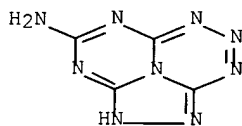


RN 485318-15-8 HCAPLUS  
CN Hydrazinecarboximidamide, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

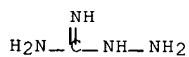
CMF C4 H3 N9



CM 2

CRN 79-17-4

CMF C H6 N4

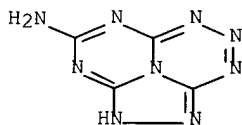


RN 485318-16-9 HCAPLUS  
CN Carbonimidic dihydrazide, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

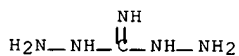
CMF C4 H3 N9



CM 2

CRN 4364-78-7

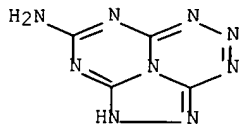
CMF C H7 N5



RN 485318-17-0 HCAPLUS  
CN Guanidine, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

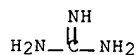
CM 1

CRN 485318-10-3  
CMF C4 H3 N9



CM 2

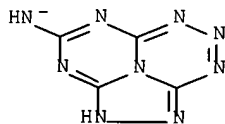
CRN 113-00-8  
CMF C H5 N3



RN 485318-19-2 HCAPLUS  
CN Phosphonium, methyltriphenyl-, salt with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

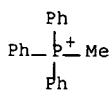
CM 1

CRN 485318-18-1  
CMF C4 H2 N9



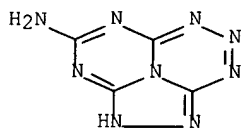
CM 2

CRN 15912-74-0  
CMF C19 H18 P



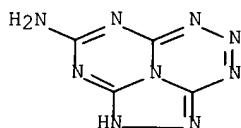
RN 485318-21-6 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, cobalt(2+) salt (2:1) (9CI) (CA INDEX NAME)





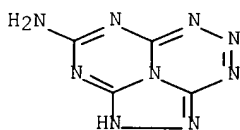
● 1/2 Co(II)

RN 485318-22-7 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, copper(2+) salt  
(2:1) (9CI) (CA INDEX NAME)



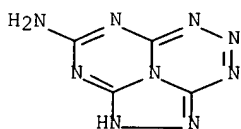
● 1/2 Cu(II)

RN 485318-23-8 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, aluminum salt  
(3:1) (9CI) (CA INDEX NAME)



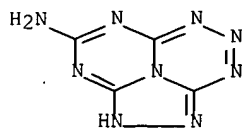
● 1/3 Al

RN 485318-24-9 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, nickel(2+) salt  
(2:1) (9CI) (CA INDEX NAME)



● 1/2 Ni(II)

RN 485318-25-0 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, barium salt (2:1)  
(9CI) (CA INDEX NAME)



●1/2 Ba

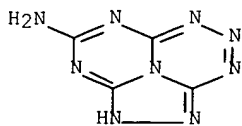
RN 485318-26-1 HCAPLUS

CN 1,2,4,5-Tetrazine-3,6-dione, 1,2-dihydro-, dihydrazone, compd. with  
1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA  
INDEX NAME)

CM 1

CRN 485318-10-3

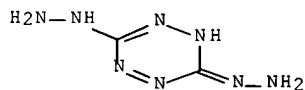
CMF C4 H3 N9



CM 2

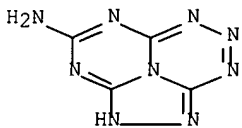
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CMF C2 H6 N8



RN 485318-27-2 HCAPLUS

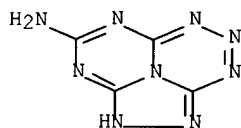
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, magnesium salt  
(2:1) (9CI) (CA INDEX NAME)



●1/2 Mg

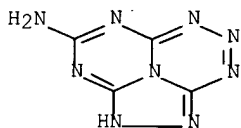
RN 485318-28-3 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, strontium salt  
(2:1) (9CI) (CA INDEX NAME)



● 1/2 Sr

RN 485319-36-6 HCAPLUS  
 CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monopotassium salt  
 (9CI) (CA INDEX NAME)

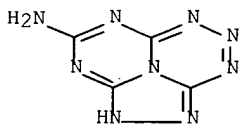


● K

RN 828942-96-7 HCAPLUS  
 CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, compd. with  
 N,N-diethylethanamine (1:1) (9CI) (CA INDEX NAME)

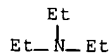
CM 1

CRN 485318-10-3  
 CMF C4 H3 N9



CM 2

CRN 121-44-8  
 CMF C6 H15 N



IC ICM C07D487-14  
 ICS C06B045-10; C06C015-00  
 INCL 544198000; 544209000; 544179000; 149056000; 149076000; 149119000  
 CC 28-20 (Heterocyclic Compounds (More Than One Hetero Atom))  
 Section cross-reference(s): 41, 50  
 ST triazolylaminotriazine deriv prepn energetic high nitrogen  
 compd; triazolotetrazinotriazine salt prepn pyrotechnic  
 explosive dye pharmaceutical intermediate  
 IT Drugs

Dyes

(intermediates; prepn. of **triazolotetrazinotriazine** salts as potential explosives, pyrotechnics, and dye and pharmaceutical intermediates)

IT Diazotization

(of **triazolotriazinotriamine**; prepn. of **triazolotetrazinotriazine** salts as potential explosives, pyrotechnics, and dye and pharmaceutical intermediates)

IT Explosives

Pyrotechnic compositions

(prepn. of **triazolotetrazinotriazine** salts as potential explosives, pyrotechnics, and dye and pharmaceutical intermediates)

IT Heterocyclic compounds

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)

(prepn. of **triazolotetrazinotriazine** salts as potential explosives, pyrotechnics, and dye and pharmaceutical intermediates)

IT 7144-22-1 443288-50-4, 1,2,4-Triazolo[4,3-a][1,3,5]

**triazine-3,5,7-triamine hydrochloride**

RL: RCT (Reactant); RACT (Reactant or reagent)

(intermediate; **triazolyl-aminotriazine** compns., including salts, and specifically **triazolotetrazinotriazines** derived from 1,2,4-triazolo[4,3-a][1,3,5]**triazine-3,5,7-triamine**)

IT 506-68-3, Cyanogen bromide 10409-76-4, 2,4-Diamino-6-hydrazino-s-**triazine**

RL: RCT (Reactant); RACT (Reactant or reagent)

(starting material; **triazolyl-aminotriazine** compns., including salts, and specifically **triazolotetrazinotriazines** derived from 1,2,4-triazolo[4,3-a][1,3,5]**triazine-3,5,7-triamine**)

IT 591-01-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(**triazolyl-aminotriazine** compns., including salts, and specifically **triazolotetrazinotriazines** derived from 1,2,4-triazolo[4,3-a][1,3,5]**triazine-3,5,7-triamine**)

IT 485318-09-0P 485318-10-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)

(**triazolyl-aminotriazine** compns., including salts, and specifically **triazolotetrazinotriazines** derived from 1,2,4-triazolo[4,3-a][1,3,5]**triazine-3,5,7-triamine**)

IT 485318-11-4P 485318-12-5P 485318-13-6P

485318-14-7P 485318-15-8P 485318-16-9P

485318-17-0P 485318-19-2P 485318-21-6P

485318-22-7P 485318-23-8P 485318-24-9P

485318-25-0P 485318-26-1P 485318-27-2P

485318-28-3P 485319-36-6P 828942-96-7P

RL: SPN (Synthetic preparation); PREP (Preparation)

(**triazolyl-aminotriazine** compns., including salts, and specifically **triazolotetrazinotriazines** derived from 1,2,4-triazolo[4,3-a][1,3,5]**triazine-3,5,7-triamine**)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L7 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:282119 HCAPLUS Full-text

DOCUMENT NUMBER: 138:287703

TITLE: Preparation of 1,2,4-triazolo[4,3-a][1,3,5]  
**triazine-3,5,7-substituted precursor and**  
its compounds

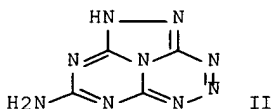
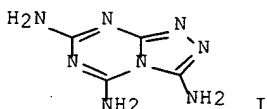
INVENTOR(S): Sitzmann, Michael E.  
 PATENT ASSIGNEE(S): The United States of America as represented by  
 the Secretary of the Navy, USA  
 SOURCE: U.S. Pat. Appl. Publ., 14 pp., Cont.-in-part of  
 U.S. Ser. No. 874,946.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 7  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003069247	A1	20030410	US 2002-181149	20020710
US 6673924	B2	20040106	<--	
US 6423844	B1	20020723	US 2001-874946	20010606
WO 2002098855	A2	20021212	WO 2002-US17564	20020531

WO 2002098855 A3 20030313  
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,  
 CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,  
 GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,  
 LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,  
 NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,  
 TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, AT, BE,  
 CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT,  
 SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,  
 SN, TD, TG

PRIORITY APPLN. INFO.: US 2001-874946 A2 20010606  
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 WO 2002-US17564 W 20020531

OTHER SOURCE(S): MARPAT 138:287703  
 GI



AB The prepn. is describe for precursor compds., 1,2,4-triazolo[4,3- a][1,3,5]triazine  
 derivs., particularly a 1,2,4-tiazolo[4,3-a][1,3,5]triazine-3,5,7-triamine (I), and  
 novel fused ring structures such as triazolyl- tetrazinyl-aminotriazine (II), and their  
 complexes and salts, and other such chem. structures. These compds. are designed for  
 use as energetic materials for pyrotechnic compns.

IT 485318-10-3P

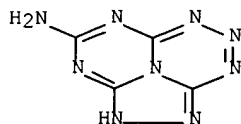
RL: RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or  
 engineered material use); PREP (Preparation); RACT (Reactant or

reagent); USES (Uses)

(prepn. of **triazolotriazinetriamine** and  
triazolo-tetrazino-aminotriazine derivs. as energetic  
materials for pyrotechnic compns.)

RN 485318-10-3 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine (9CI) (CA INDEX  
NAME)

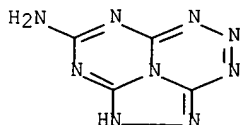


IT 485318-09-0P 485318-11-4P 485318-12-5P  
485318-13-6P 485318-14-7P 485318-15-8P  
485318-16-9P 485318-17-0P 485318-19-2P  
485318-20-5P 485318-21-6P 485318-22-7P  
485318-23-8P 485318-24-9P 485318-25-0P  
485318-26-1P 485318-27-2P 485318-28-3P  
485319-36-6P

RL: SPN (Synthetic preparation); TEM (Technical or engineered  
material use); PREP (Preparation); USES (Uses)  
(prepn. of **triazolotriazinetriamine** and  
triazolo-tetrazino-aminotriazine derivs. as energetic  
materials for pyrotechnic compns.)

RN 485318-09-0 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monosodium salt  
(9CI) (CA INDEX NAME)



● Na

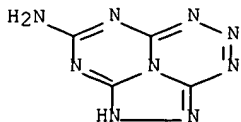
RN 485318-11-4 HCAPLUS

CN Urea, (aminoiminomethyl)-, compd. with 1H-1,2,3,4,5,6,8,8b-  
octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

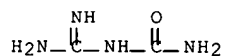
CRN 485318-10-3

CMF C4 H3 N9



CM 2

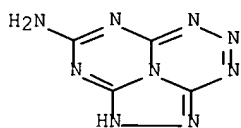
CRN 141-83-3  
CMF C2 H6 N4 O



RN 485318-12-5 HCAPLUS  
CN Carbonohydrazonic dihydrazide, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

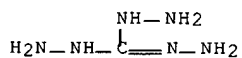
CM 1

CRN 485318-10-3  
CMF C4 H3 N9



CM 2

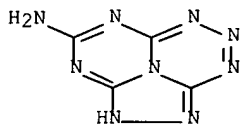
CRN 2203-24-9  
CMF C H8 N6



RN 485318-13-6 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, compd. with hydrazine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3  
CMF C4 H3 N9

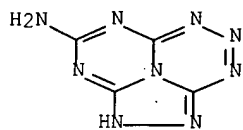


CM 2

CRN 302-01-2  
CMF H4 N2

H<sub>2</sub>N—NH<sub>2</sub>

RN 485318-14-7 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monoammoniate  
(9CI) (CA INDEX NAME)



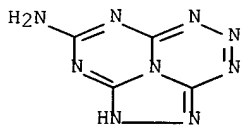
● NH<sub>3</sub>

RN 485318-15-8 HCAPLUS  
CN Hydrazinecarboximidamide, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

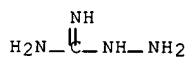
CMF C4 H3 N9



CM 2

CRN 79-17-4

CMF C H6 N4



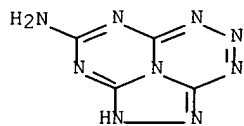
RN 485318-16-9 HCAPLUS  
CN Carbonimidic dihydrazide, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

CMF C4 H3 N9

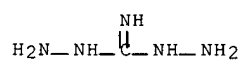




CM 2

CRN 4364-78-7

CMF C H7 N5



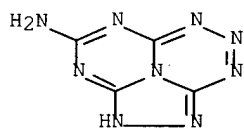
RN 485318-17-0 HCAPLUS

CN Guanidine, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

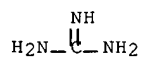
CMF C4 H3 N9



CM 2

CRN 113-00-8

CMF C H5 N3



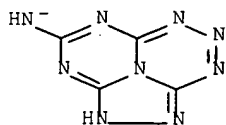
RN 485318-19-2 HCAPLUS

CN Phosphonium, methyltriphenyl-, salt with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-18-1

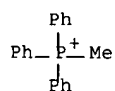
CMF C4 H2 N9



CM 2

CRN 15912-74-0

CMF C19 H18 P



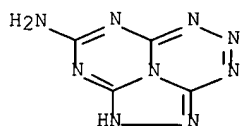
RN 485318-20-5 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, compd. with  
N,N-diethylethanamine (2:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

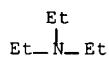
CMF C4 H3 N9



CM 2

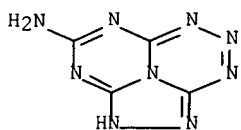
CRN 121-44-8

CMF C6 H15 N



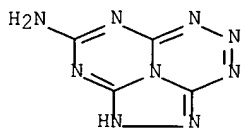
RN 485318-21-6 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, cobalt(2+) salt  
(2:1) (9CI) (CA INDEX NAME)



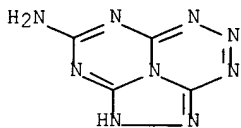
● 1/2 Co(II)

RN 485318-22-7 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, copper(2+) salt  
(2:1) (9CI) (CA INDEX NAME)



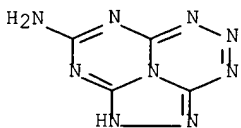
●1/2 Cu(II)

RN 485318-23-8 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, aluminum salt  
(3:1) (9CI) (CA INDEX NAME)



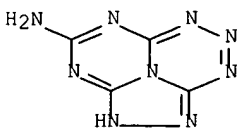
●1/3 Al

RN 485318-24-9 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, nickel(2+) salt  
(2:1) (9CI) (CA INDEX NAME)



●1/2 Ni(II)

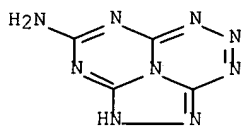
RN 485318-25-0 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, barium salt (2:1)  
(9CI) (CA INDEX NAME)



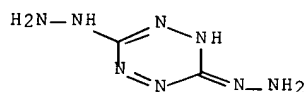
●1/2 Ba

RN 485318-26-1 HCAPLUS

CRN 485318-10-3  
CMF C4 H3 N9



CRN 5940-53-4  
CMF C2 H6 N8

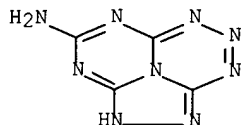
NC1=NC=NC2=C1N=CN2

● 1/2 Mg

Nc1ncnc2n(cnc12)N

●1/2 Sr

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RN 485319-36-6 HCAPLUS
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monopotassium salt
(9CI) (CA INDEX NAME)
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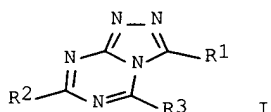


● K

IC A61K031-53; C07D487-02  
 INCL 514246000; 544180000  
 CC 28-19 (Heterocyclic Compounds (More Than One Hetero Atom))  
 Section cross-reference(s): 50, 78  
 ST **triazolotriazine** prepn energetic material pyrotechnic;  
 octaazaacenaphthylene prepn energetic material pyrotechnic  
 IT Explosives  
 Pyrotechnic compositions  
 (prepn. of **triazolotriazinetriamine** and  
 triazolo-tetrazino-**aminotriazine** derivs. as energetic  
 materials for pyrotechnic compns.)  
 IT 10409-76-4, 2,6-Diamino-6-hydrazino-s-**triazine**  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (prepn. of **triazolotriazinetriamine** and  
 triazolo-tetrazino-**aminotriazine** derivs. as energetic  
 materials for pyrotechnic compns.)  
 IT 7144-22-1P 485318-08-9P **485318-10-3P**  
 RL: RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or  
 engineered material use); PREP (Preparation); RACT (Reactant or  
 reagent); USES (Uses)  
 (prepn. of **triazolotriazinetriamine** and  
 triazolo-tetrazino-**aminotriazine** derivs. as energetic  
 materials for pyrotechnic compns.)  
 IT **485318-09-0P 485318-11-4P 485318-12-5P**  
**485318-13-6P 485318-14-7P 485318-15-8P**  
**485318-16-9P 485318-17-0P 485318-19-2P**  
**485318-20-5P 485318-21-6P 485318-22-7P**  
**485318-23-8P 485318-24-9P 485318-25-0P**  
**485318-26-1P 485318-27-2P 485318-28-3P**  
**485319-36-6P 485319-37-7P**  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered  
 material use); PREP (Preparation); USES (Uses)  
 (prepn. of **triazolotriazinetriamine** and  
 triazolo-tetrazino-**aminotriazine** derivs. as energetic  
 materials for pyrotechnic compns.)  
 REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN  
 THE RE FORMAT

L7 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2003:43052 HCAPLUS Full-text  
 DOCUMENT NUMBER: 138:92349  
 TITLE: Synthesis and properties of substituted  
 1,2,4-triazolo[4,3-a][1,3,5]**triazines**  
 as candidate explosives and pyrotechnics  
 INVENTOR(S): Koppes, William M.; Sitzmann, Michael E.  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 14 pp., Cont.-in-part of  
 U.S. 6,423,844.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 7  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003013878	A1	20030116	US 2002-171114	20020614
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US 6632305	B2	20031014		
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US 6846926	B1	20050125	US 2003-439805	20030519
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US 6919453	B1	20050719	US 2003-439804	20030519
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US 7015222	B1	20060321	US 2004-781956	20040220
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PRIORITY APPLN. INFO.:			US 2001-874946	A2 20010606
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			US 2002-171114	A2 20020614
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OTHER SOURCE(S):	MARPAT 138:92349			
GI				



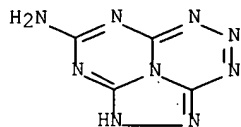
AB Novel fused-ring energetic compds. have the general structure I, in which R1 = NH2 and R2 and R3 are electron-donating groups, esp. lower alkylamino, di-lower alkyl-amino, -NH2, halo, aryl, lower alkoxy, lower aralkoxy, aryloxy, mercapto, lower alkylthio, -O-, -CO2-, -OC(:O)R, and -OCH3. In addn., R1 and R3 can combine to form a fused ring with >5 (preferably a 6- or 7-membered ring contg. ≥3 nitrogen atoms). The compds. are conveniently synthesized by reacting a 2,4-substituted-6-hydrazino-s-triazine with a nitrile.

IT 485318-09-0P 485318-10-3P 485318-11-4P  
485318-12-5P 485318-13-6P 485318-14-7P  
485318-15-8P 485318-16-9P 485318-17-0P  
485318-19-2P 485318-20-5P 485318-21-6P  
485318-22-7P 485318-23-8P 485318-24-9P  
485318-25-0P 485318-26-1P 485318-27-2P  
485318-28-3P 485319-36-6P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(synthesis and properties of substituted 1,2,4-triazolo[4,3-

a)[1,3,5]triazines as candidate explosives and  
pyrotechnics)

RN 485318-09-0 HCAPLUS

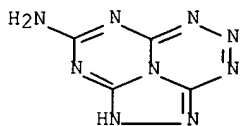
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monosodium salt  
(9CI) (CA INDEX NAME)



● Na

RN 485318-10-3 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine (9CI) (CA INDEX  
NAME)



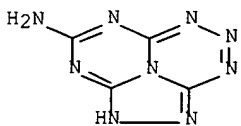
RN 485318-11-4 HCAPLUS

CN Urea, (aminoiminomethyl)-, compd. with 1H-1,2,3,4,5,6,8,8b-  
octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

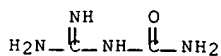
CMF C4 H3 N9



CM 2

CRN 141-83-3

CMF C2 H6 N4 O



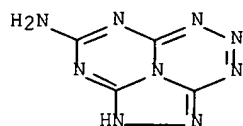
RN 485318-12-5 HCAPLUS

CN Carbonohydrazone dihydrazide, compd. with 1H-1,2,3,4,5,6,8,8b-  
octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

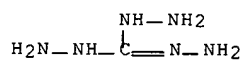
CMF C4 H3 N9



CM 2

CRN 2203-24-9

CMF C H8 N6



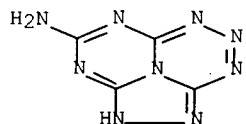
RN 485318-13-6 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, compd. with hydrazine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

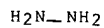
CMF C4 H3 N9



CM 2

CRN 302-01-2

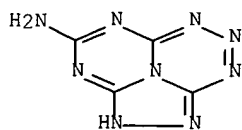
CMF H4 N2



RN 485318-14-7 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monoammoniate (9CI) (CA INDEX NAME)



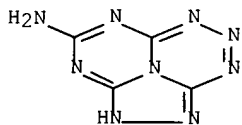


● NH<sub>3</sub>

RN 485318-15-8 HCAPLUS  
 CN Hydrazinecarboximidamide, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

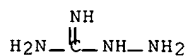
CM 1

CRN 485318-10-3  
 CMF C4 H3 N9



CM 2

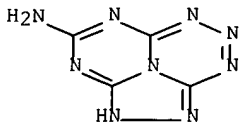
CRN 79-17-4  
 CMF C H6 N4



RN 485318-16-9 HCAPLUS  
 CN Carbonimidic dihydrazide, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

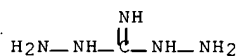
CM 1

CRN 485318-10-3  
 CMF C4 H3 N9



CM 2

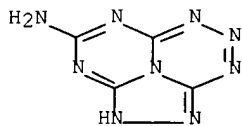
CRN 4364-78-7  
 CMF C H7 N5



RN 485318-17-0 HCAPLUS  
 CN Guanidine, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

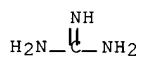
CM 1

CRN 485318-10-3  
 CMF C4 H3 N9



CM 2

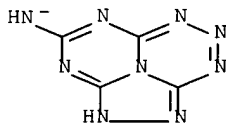
CRN 113-00-8  
 CMF C H5 N3



RN 485318-19-2 HCAPLUS  
 CN Phosphonium, methyltriphenyl-, salt with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

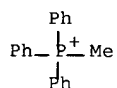
CM 1

CRN 485318-18-1  
 CMF C4 H2 N9

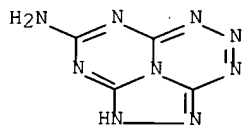


CM 2

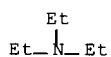
CRN 15912-74-0  
 CMF C19 H18 P



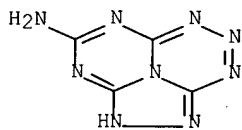
RN 485318-20-5 HCAPLUS  
 CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, compd. with  
 N,N-diethylethanamine (2:1) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 485318-10-3  
 CMF C4 H3 N9



CM 2  
 CRN 121-44-8  
 CMF C6 H15 N

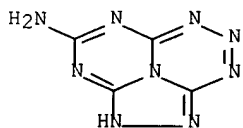


RN 485318-21-6 HCAPLUS  
 CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, cobalt(2+) salt  
 (2:1) (9CI) (CA INDEX NAME)



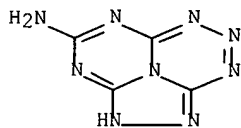
● 1/2 Co(II)

RN 485318-22-7 HCAPLUS  
 CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, copper(2+) salt  
 (2:1) (9CI) (CA INDEX NAME)



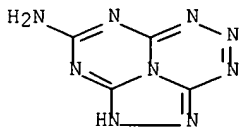
● 1/2 Cu(II)

RN 485318-23-8 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, aluminum salt  
(3:1) (9CI) (CA INDEX NAME)



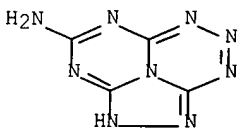
● 1/3 Al

RN 485318-24-9 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, nickel(2+) salt  
(2:1) (9CI) (CA INDEX NAME)



● 1/2 Ni(II)

RN 485318-25-0 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, barium salt (2:1)  
(9CI) (CA INDEX NAME)

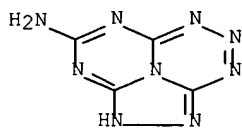


● 1/2 Ba

RN 485318-26-1 HCAPLUS  
CN 1,2,4,5-Tetrazine-3,6-dione, 1,2-dihydro-, dihydrazone, compd. with  
1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA  
INDEX NAME)

CM 1

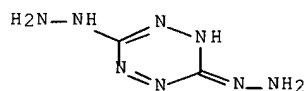
CRN 485318-10-3  
CMF C4 H3 N9



CM 2

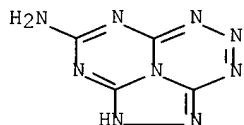
CRN 5940-53-4

CMF C2 H6 N8



RN 485318-27-2 HCAPLUS

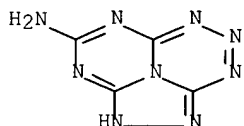
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, magnesium salt  
(2:1) (9CI) (CA INDEX NAME)



● 1/2 Mg

RN 485318-28-3 HCAPLUS

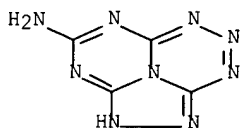
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, strontium salt  
(2:1) (9CI) (CA INDEX NAME)



● 1/2 Sr

RN 485319-36-6 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monopotassium salt  
(9CI) (CA INDEX NAME)



● K

IC ICM A61K031-53  
ICS C07D487-04  
INCL 544180000; X51-424.6  
CC 50-2 (Propellants and Explosives)  
Section cross-reference(s): 28  
ST **triazolotriazine** fused ring energetic salt explosive  
pyrotechnic  
IT Explosives  
Pyrotechnic compositions  
(synthesis and properties of substituted 1,2,4-triazolo[4,3-a][1,3,5]**triazines** as candidate explosives and pyrotechnics)  
IT 10409-76-4, 1,3,5-Triazin-2(1H)-one, 4,6-diamino-, hydrazone  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(cyanogen reaction with; in synthesis of substituted 1,2,4-triazolo[4,3-a][1,3,5]**triazines**)  
IT 485319-38-8  
RL: MSC (Miscellaneous)  
(synthesis and properties of substituted 1,2,4-triazolo[4,3-a][1,3,5]**triazines** as candidate explosives and pyrotechnics)  
IT 7144-22-1DP, 1,2,4-Triazolo[4,3-a][1,3,5]-**triazine**  
-3,5,7-triamine, salts 7144-22-1P, 1,2,4-Triazolo[4,3-a][1,3,5]-**triazine**-3,5,7-triamine 485318-08-9P 485318-09-0P  
485318-10-3P 485318-11-4P 485318-12-5P  
485318-13-6P 485318-14-7P 485318-15-8P  
485318-16-9P 485318-17-0P 485318-19-2P  
485318-20-5P 485318-21-6P 485318-22-7P  
485318-23-8P 485318-24-9P 485318-25-0P  
485318-26-1P 485318-27-2P 485318-28-3P  
485319-36-6P 485319-37-7P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP  
(Preparation)  
(synthesis and properties of substituted 1,2,4-triazolo[4,3-a][1,3,5]**triazines** as candidate explosives and pyrotechnics)

L7 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2003:43051 HCAPLUS Full-text  
DOCUMENT NUMBER: 138:92351  
TITLE: Synthesis and properties of substituted  
1,2,4-triazolo[4,3-a][1,3,5]**triazines**  
and **triazine** metal complexes as  
candidate explosives and pyrotechnics  
INVENTOR(S): Koppes, William M.; Sitzmann, Michael E.  
PATENT ASSIGNEE(S): USA  
SOURCE: U.S. Pat. Appl. Publ., 10 pp., Cont.-in-part of  
U. S. 6,423,844.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 7  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2003013877

A1

20030116

US 2002-171134

200206  
14

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US 6602366

B2

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US 6423844

B1

20020723

US 2001-874946

200106  
06

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PRIORITY APPLN. INFO.:

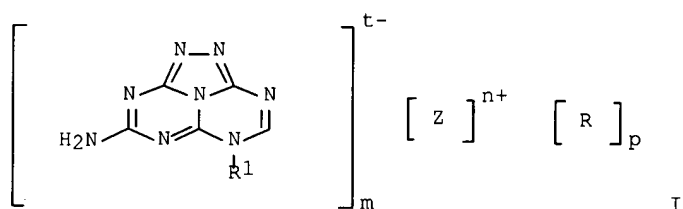
US 2001-874946

A2

200106  
06

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GI



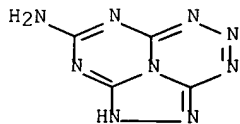
AB Pyrotechnic compns. are complexes and salts of derivs. of amino-1,2,4-triazolo[4,3-a][1,3,5]triazine (I; Z = H<sup>+</sup> or a metal or org. cation; R is a complexing component; R<sup>1</sup> is H or a neg. charge; m = 1-3; n = 0-3; p = 0-2; and t = (0 or 1) times m), in which combustion of the Z<sup>+</sup> component results in a color. Suitable Z components include Na<sup>+</sup>, Co<sup>2+</sup>, Cu<sup>2+</sup>, Al<sup>3+</sup>, Ni<sup>2+</sup>, Ba<sup>2+</sup>, Sr<sup>2+</sup>, guanylurea, triaminoguanidine, hydrazine, ammonium, guanidine, diaminoguanidine, and guanidine. The compds. are prep. by first diazotization of a triazolyl-teraziny- aminotriazine precursor.

IT 485318-10-3DP, salts and complexes

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(pyrotechnics; synthesis and properties of substituted  
1,2,4-triazolo[4,3-a][1,3,5]triazines and  
triazine metal complexes as candidate explosives and  
pyrotechnics)

RN 485318-10-3 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine (9CI) (CA INDEX  
NAME)



IT 485318-09-0P 485318-10-3P 485318-11-4P  
485318-12-5P 485318-13-6P 485318-14-7P  
485318-15-8P 485318-16-9P 485318-17-0P  
485318-19-2P 485318-20-5P 485318-21-6P  
485318-22-7P 485318-23-8P 485318-24-9P  
485318-25-0P 485318-26-1P 485318-27-2P  
485318-28-3P 485319-36-6P

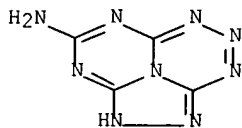
RL: PRP (Properties); SPN (Synthetic preparation); PREP

(Preparation)

(synthesis and properties of substituted 1,2,4-triazolo[4,3-a][1,3,5]triazines and triazine metal complexes as candidate explosives and pyrotechnics)

RN 485318-09-0 HCAPLUS

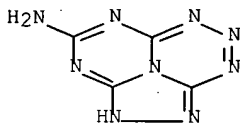
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monosodium salt (9CI) (CA INDEX NAME)



● Na

RN 485318-10-3 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine (9CI) (CA INDEX NAME)



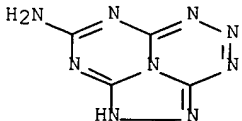
RN 485318-11-4 HCAPLUS

CN Urea, (aminoiminomethyl)-, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

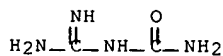
CMF C4 H3 N9



CM 2

CRN 141-83-3

CMF C2 H6 N4 O



RN 485318-12-5 HCAPLUS

CN Carbonohydrazone dihydrazide, compd. with 1H-1,2,3,4,5,6,8,8b-

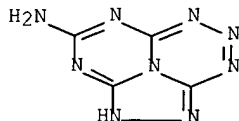


octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

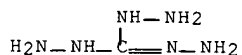
CMF C4 H3 N9



CM 2

CRN 2203-24-9

CMF C H8 N6



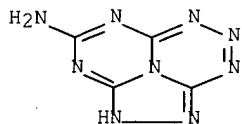
RN 485318-13-6 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, compd. with hydrazine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

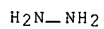
CMF C4 H3 N9



CM 2

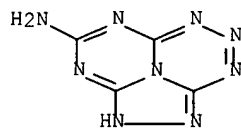
CRN 302-01-2

CMF H4 N2



RN 485318-14-7 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monoammoniate (9CI) (CA INDEX NAME)

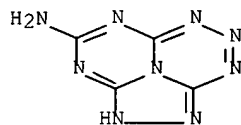


● NH<sub>3</sub>

RN 485318-15-8 HCAPLUS  
 CN Hydrazinecarboximidamide, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

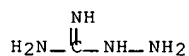
CM 1

CRN 485318-10-3  
 CMF C4 H3 N9



CM 2

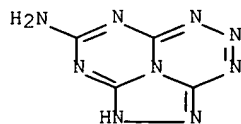
CRN 79-17-4  
 CMF C H6 N4



RN 485318-16-9 HCAPLUS  
 CN Carbonimidic dihydrazide, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

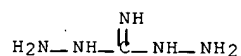
CM 1

CRN 485318-10-3  
 CMF C4 H3 N9



CM 2

CRN 4364-78-7  
 CMF C H7 N5



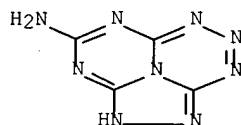
RN 485318-17-0 HCAPLUS

CN Guanidine, compd. with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-10-3

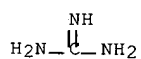
CMF C4 H3 N9



CM 2

CRN 113-00-8

CMF C H5 N3



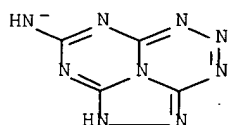
RN 485318-19-2 HCAPLUS

CN Phosphonium, methyltriphenyl-, salt with 1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 485318-18-1

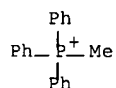
CMF C4 H2 N9



CM 2

CRN 15912-74-0

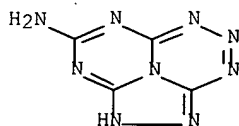
CMF C19 H18 P



RN 485318-20-5 HCAPLUS  
 CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, compd. with  
 N,N-diethylethanamine (2:1) (9CI) (CA INDEX NAME)

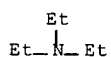
CM 1

CRN 485318-10-3  
 CMF C4 H3 N9

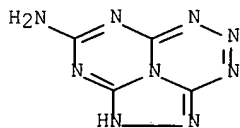


CM 2

CRN 121-44-8  
 CMF C6 H15 N

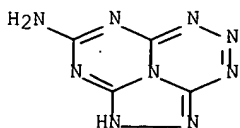


RN 485318-21-6 HCAPLUS  
 CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, cobalt(2+) salt  
 (2:1) (9CI) (CA INDEX NAME)



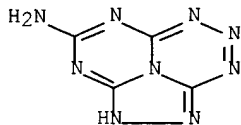
● 1/2 Co(II)

RN 485318-22-7 HCAPLUS  
 CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, copper(2+) salt  
 (2:1) (9CI) (CA INDEX NAME)



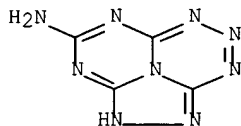
● 1/2 Cu(II)

RN 485318-23-8 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, aluminum salt  
(3:1) (9CI) (CA INDEX NAME)



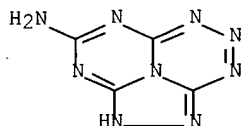
●1/3 Al

RN 485318-24-9 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, nickel(2+) salt  
(2:1) (9CI) (CA INDEX NAME)



●1/2 Ni(II)

RN 485318-25-0 HCAPLUS  
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, barium salt (2:1)  
(9CI) (CA INDEX NAME)

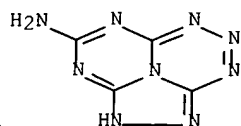


●1/2 Ba

RN 485318-26-1 HCAPLUS  
CN 1,2,4,5-Tetrazine-3,6-dione, 1,2-dihydro-, dihydrazone, compd. with  
1H-1,2,3,4,5,6,8,8b-octaazaacenaphthylen-7-amine (1:1) (9CI) (CA  
INDEX NAME)

CM 1

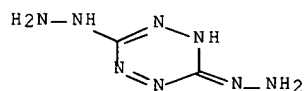
CRN 485318-10-3  
CMF C4 H3 N9



CM 2

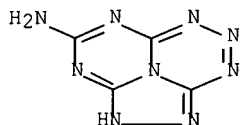
CRN 5940-53-4

CMF C2 H6 N8



RN 485318-27-2 HCAPLUS

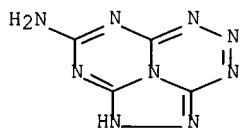
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, magnesium salt  
(2:1) (9CI) (CA INDEX NAME)



● 1/2 Mg

RN 485318-28-3 HCAPLUS

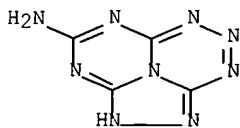
CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, strontium salt  
(2:1) (9CI) (CA INDEX NAME)



● 1/2 Sr

RN 485319-36-6 HCAPLUS

CN 1H-1,2,3,4,5,6,8,8b-Octaazaacenaphthylen-7-amine, monopotassium salt  
(9CI) (CA INDEX NAME)



● K

IC ICM C07D487-14  
 INCL 544179000  
 CC 50-3 (Propellants and Explosives)  
 Section cross-reference(s): 28  
 ST **tetrazinyl triazolotriazine** fused ring energetic  
 salt pyrotechnic; metal complex **tetrazinyl**  
**triazolotriazine** pyrotechnic  
 IT Diazotization  
 Pyrotechnic compositions  
 (synthesis and properties of substituted 1,2,4-triazolo[4,3-  
 a][1,3,5]**triazines** and **triazine** metal  
 complexes as candidate explosives and pyrotechnics)  
 IT 10409-76-4, 1,3,5-Triazin-2(1H)-one, 4,6-diamino-, hydrazone  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (cyanogen reaction with; in synthesis of substituted  
 1,2,4-triazolo[4,3-a][1,3,5]**triazines** and  
**triazine** metal complexes)  
 IT 7144-22-1P, 1,2,4-Triazolo[4,3-a][1,3,5]**triazine**  
 -3,5,7-triamine  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (diazotization of; synthesis and properties of substituted  
 1,2,4-triazolo[4,3-a][1,3,5]**triazines** and  
**triazine** metal complexes as candidate explosives and  
 pyrotechnics)  
 IT **485318-10-3DP**, salts and complexes  
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or  
 engineered material use); PREP (Preparation); USES (Uses)  
 (pyrotechnics; synthesis and properties of substituted  
 1,2,4-triazolo[4,3-a][1,3,5]**triazines** and  
**triazine** metal complexes as candidate explosives and  
 pyrotechnics)  
 IT 485318-08-9P  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation);  
 PREP (Preparation); RACT (Reactant or reagent)  
 (synthesis and properties of substituted 1,2,4-triazolo[4,3-  
 a][1,3,5]**triazines** and **triazine** metal  
 complexes as candidate explosives and pyrotechnics)  
 IT **485318-09-0P 485318-10-3P 485318-11-4P**  
**485318-12-5P 485318-13-6P 485318-14-7P**  
**485318-15-8P 485318-16-9P 485318-17-0P**  
**485318-19-2P 485318-20-5P 485318-21-6P**  
**485318-22-7P 485318-23-8P 485318-24-9P**  
**485318-25-0P 485318-26-1P 485318-27-2P**  
**485318-28-3P 485319-36-6P**  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (synthesis and properties of substituted 1,2,4-triazolo[4,3-  
 a][1,3,5]**triazines** and **triazine** metal  
 complexes as candidate explosives and pyrotechnics)

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